Java and the Web

Session 619

Java and the Web

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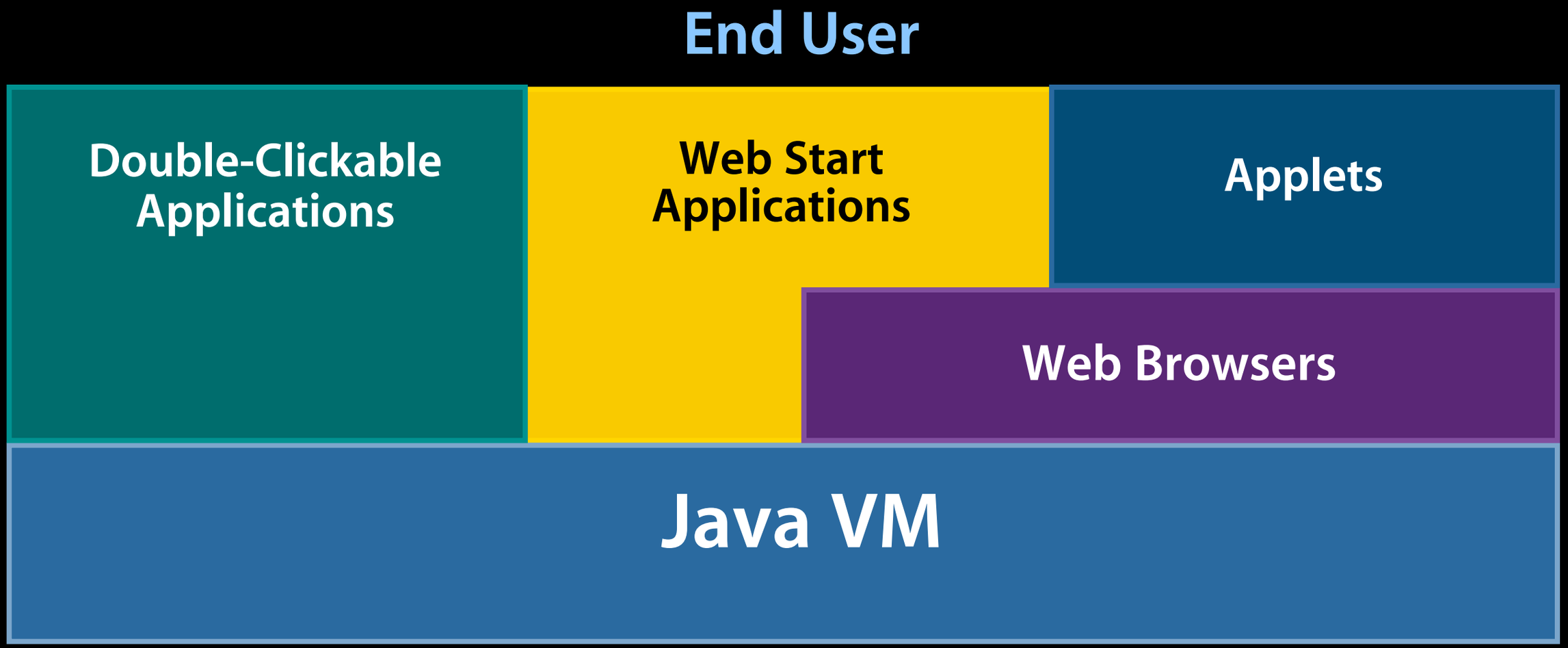
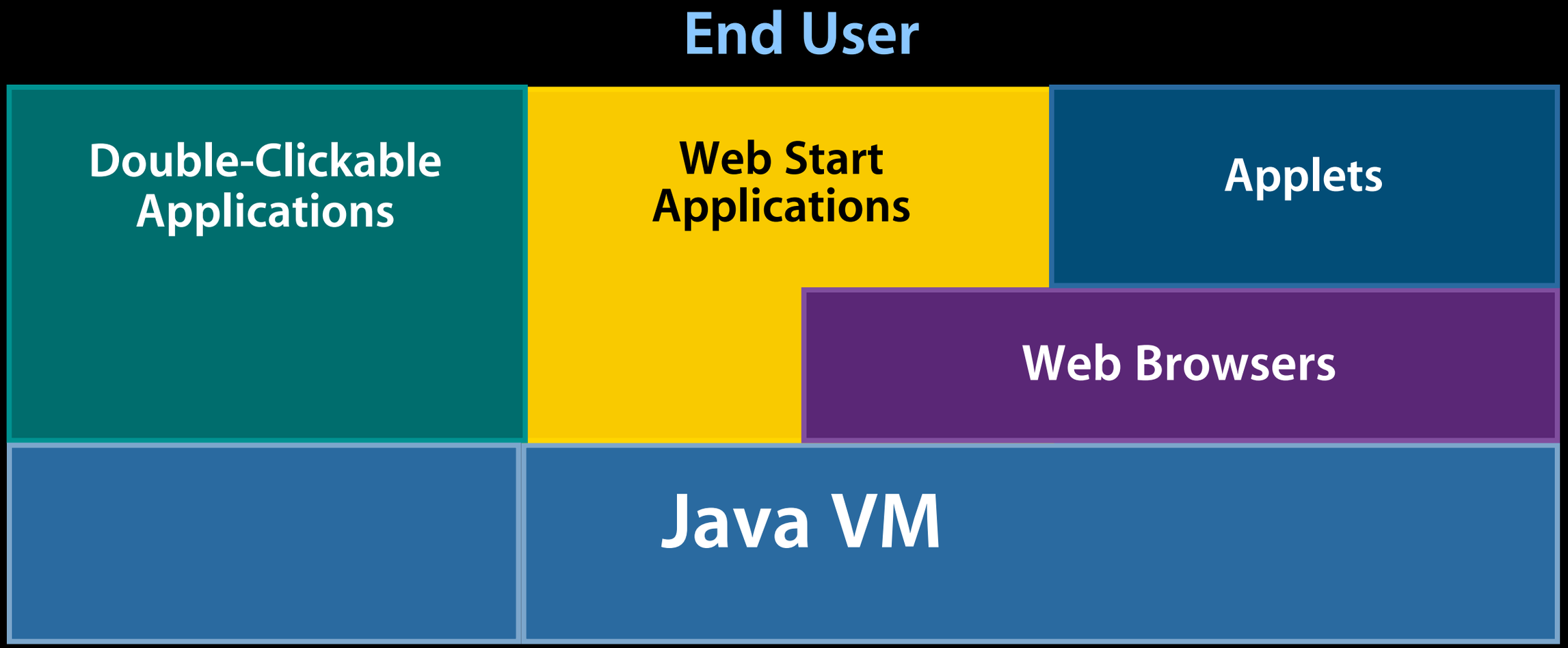
What You'll Learn

- Web-based deployment technologies on Mac OS X
- Features for applet developers
- Features for Java Web Start developers
- Debugging tips for applets
- Which one is right for you?

Java Deployment Options

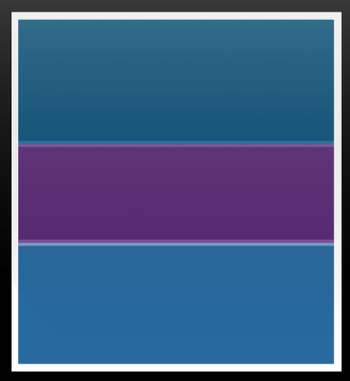


Java Deployment Options



Applets: Where We Are Today

Your Applets	
IE, Netscape, others	Safari
Embedding framework	Java Cocoa Plugin
Java 1.3.1	Java 1.4.1



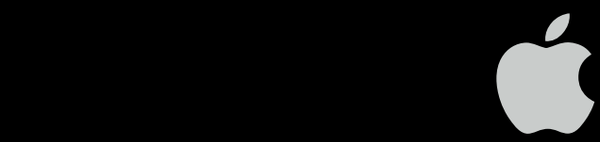
End User

Applet Support on Mac OS X

- Built on Sun's Java Plugin technology
- Cross-platform compatible
- Already installed on end-user machines
- 1.4.1_01 available through Safari and Applet Launcher
- 1.3.1 available through Internet Explorer, Netscape, and others

Java Web Start

- An alternative deployment technology for applications
- One-click launching from the browser
- Dynamic updating of your application
- Platform neutral, but not platform ignorant
- Lets you deliver full applications
- Mac OS X can serve JNLP-based apps without modification



Applets and Java Web Start

Applets and Mac OS X

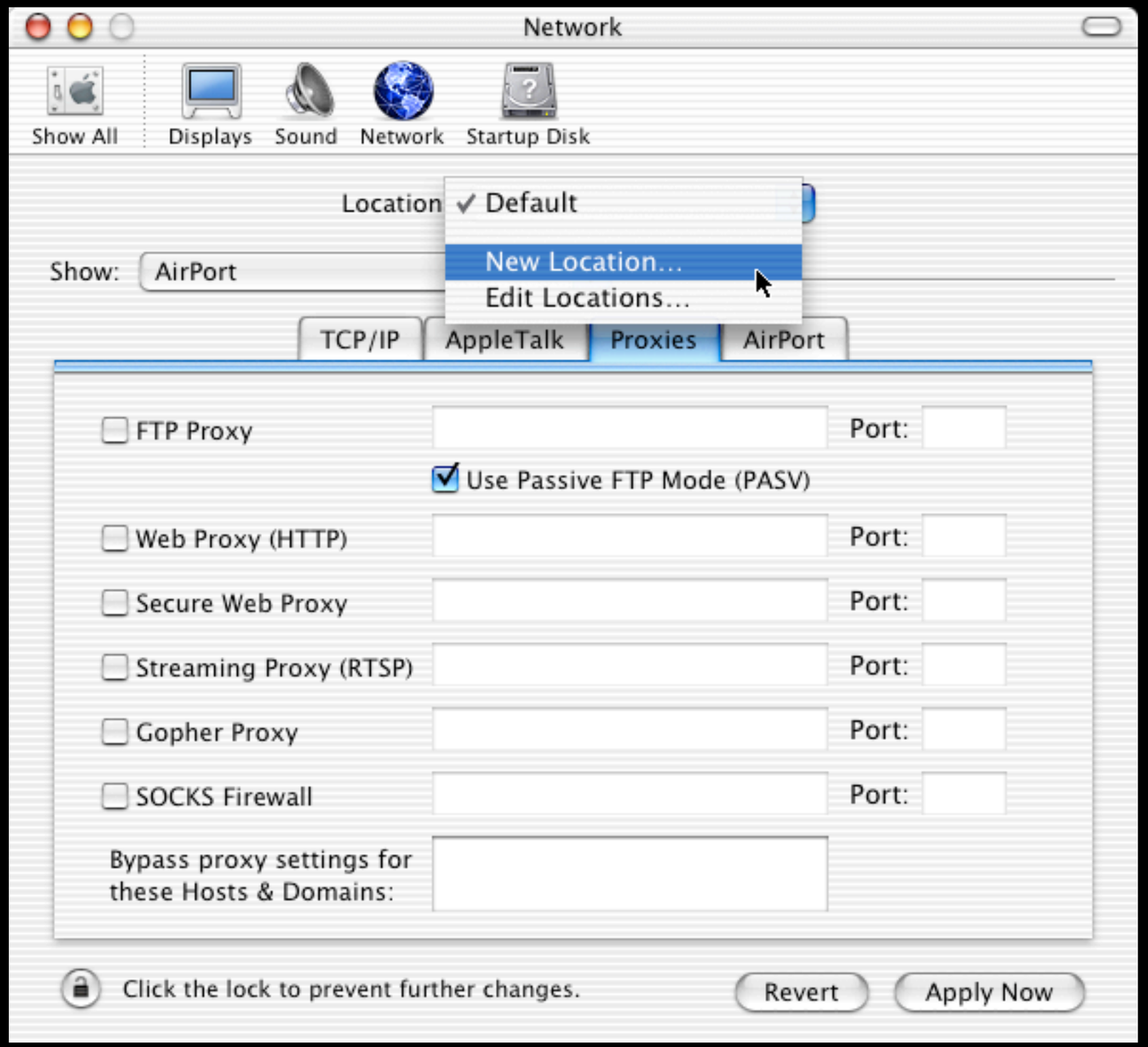
- Built on Sun's Java Plug-in technology
  - <http://java.sun.com/j2se/1.4.1/docs/guide/plugin/>
- All features work on Mac OS X
- Focus on how we differ from Windows or Solaris

Applets: Starting Up

- How should you code your web page for an applet?
  - For best compatibility use the <APPLET> tag
  - <OBJECT>, <EMBED> tags work, but <APPLET> is more compatible across platforms.
- Use system properties to determine VM version

```
String version = System.getProperty(”java.version”);
String platform =
    System.getProperty(”java.specification.version”);
String os = System.getProperty(”os.name”);
```

Applets: Proxy Settings



Applets: HTTPS

- Built into plugin
- Based on JSSE, standard in 1.4
- By default root certificate store comes from user's Keychain
- If user decides to always trust a given server certificate, it will be added to the Keychain
- Users can manage certificates via Keychain Access

Applets: HTTPS

- Self-signed certificates currently cannot be stored in the Keychain
- Set the Java property
  `com.apple.security.useJavaKeystore`
  to true to use the Java keystore
- If using the Java keystore, Java Plugin Settings application manages the certificates
- Use the Java keystore as a last resort

Applets: Signed JARs

- Signed applets supported
  - Netscape/IE-style signing
  - One signature works for all platforms
- If user decides to always trust your JAR file, its certificate is stored in keychain
- Set the Java property `com.apple.security.useJavaKeystore` to true to use the Java keystore
- Use the Java keystore as a last resort

Applets: Applet Caching

- In 1.4.1 **all** remote applets get cached
  - This includes JAR files, images, and sounds
- Speeds up subsequent applet launches
- Larger applets will see most significant improvement

Applets: Applet Caching

```
<PARAM NAME = "cache_archive"
       VALUE = "a.jar, b.jar, c.jar">
<PARAM NAME = "cache_version"
       VALUE = "1.2.0.1, 2.1.1.2, 1.1.2.7">
```

- Must have both params!
- One-to-one mapping of JARs to versions

Applets: Applet Caching

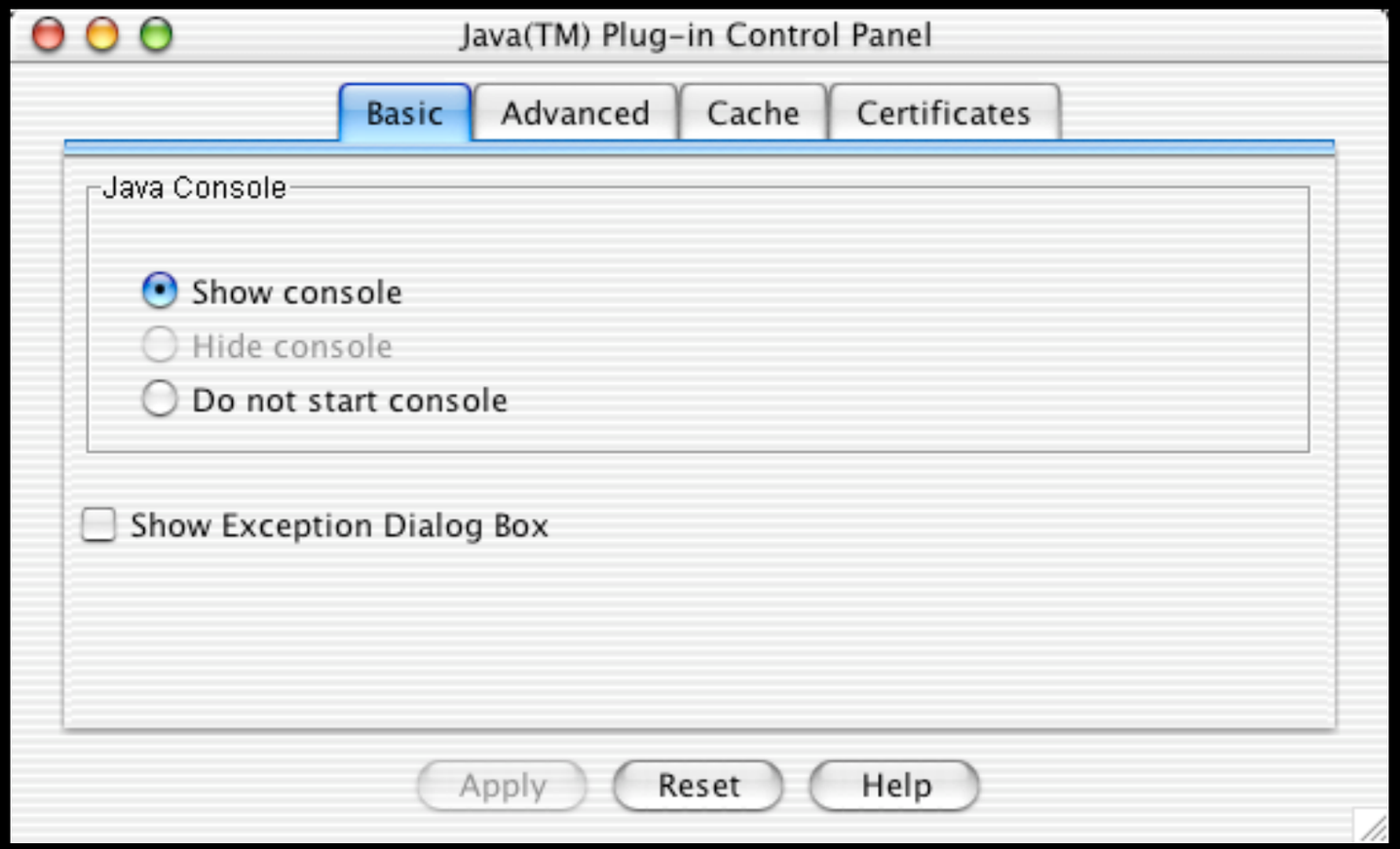
```
<PARAM NAME = “cache_archive_ex”
       VALUE = “jar_file_name;[preload];[JAR version],
                jar_file_name;[preload];[JAR version]...”
```

Example:

```
   <APPLET>
        ....
        ....
       <PARAM NAME="cache_archive_ex"
              VALUE="applet.jar;preload,
                     util.jar;preload;0.9.0.AC1,
                     tools.jar;0.9.8.7F">
        ....
        ....
  </APPLET>
```

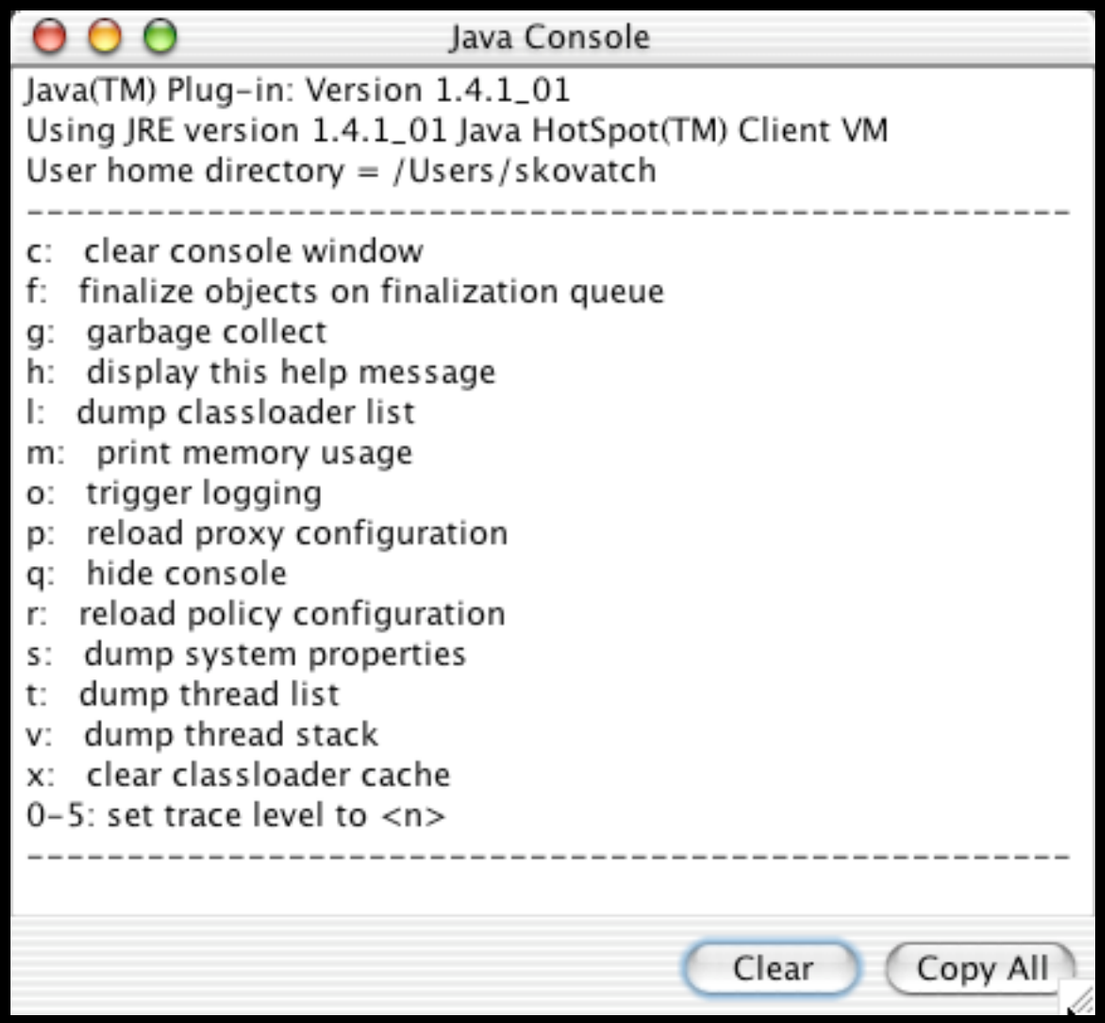
Applets: Java Plug-in Settings

- In /Applications/Utilities/Java
- Pick the version for the VM you are targeting



Applets: Java Console

- System.out, System.err
- Logging and tracing
- Thread stack
- Classloader cache control



Developing Applets

Java Web Start: Mac OS X Details

- JVM's must be installed via Software Update
  - Can't auto-download a VM with Web Start
- Native libraries must follow Mac OS X conventions
  - `lib<native lib name>.jnilib`
  - System.loadLibrary("<native lib name>")

Java Web Start: Mac OS X Details

- To install Mac OS X-specific resources use a <resources> element with an os = "Mac OS X" attribute

```
<resources>
    <j2se version="1.4*"/>
    <jar href="lib/myjar.jar" version="1.2"/>
    <property name="key1" value="value1"/>
    <property name="key2" value="value2"/>
</resources>
<resources os="Mac OS X">
    <jar href="lib/MacExtras.jar"/>
</resources>
```

Java Web Start: JVM Versions

If you specify…	You will get…
<j2se version="1.3*”/>	1.3.1
<j2se version="1.3+”/>	Most recent JVM >= 1.3.1
<j2se version="1.4*”/>	1.4.1
<j2se version="1.4+”/>	Most recent JVM >= 1.4.1
<j2se version=”1.3.1” href=”...”>	1.3.1
<j2se version=”1.4.1_01” href=”...”>	1.4.1

New in 1.4.1 Update 1 for Jaguar

- Cookie integration with Safari!
  - Generally, no work on your part needs to be done
  - For 1.3.1 applets see Technical Q&A 1265
  - Give us your feedback

Applets: Where We Are Today

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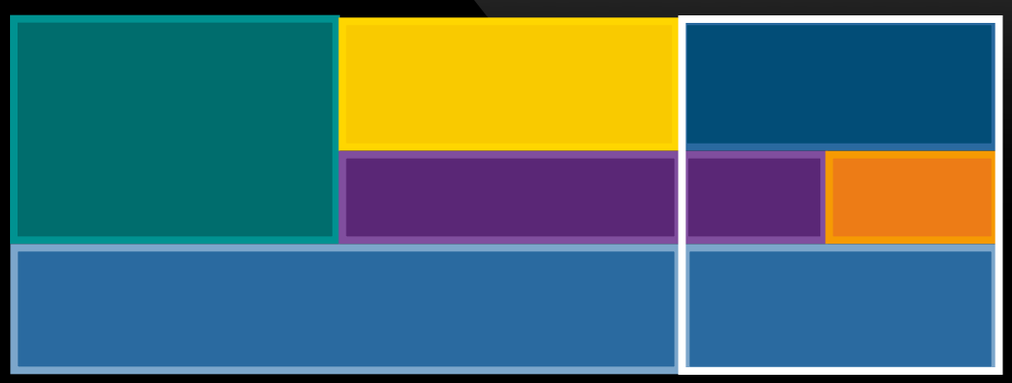
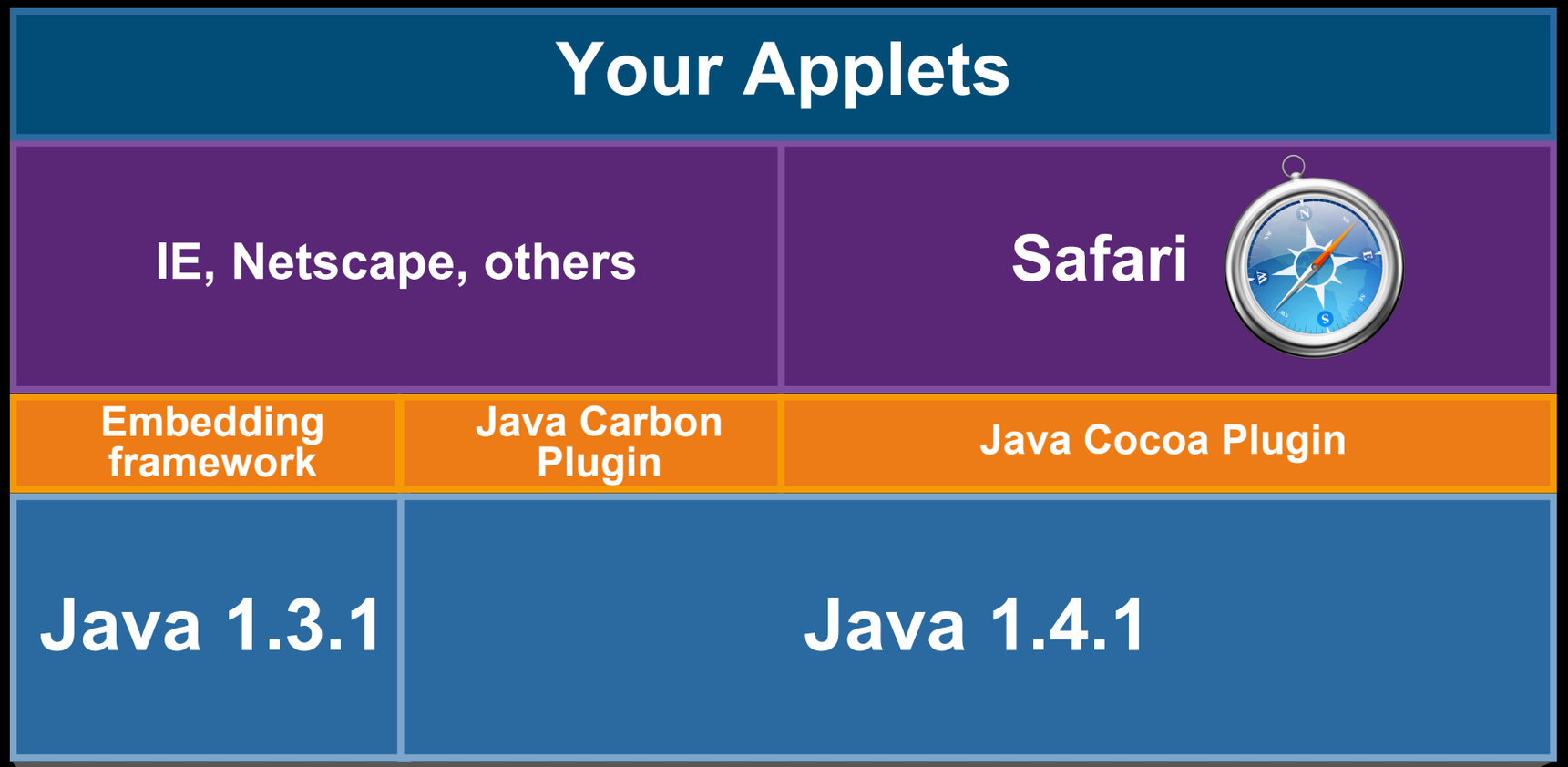
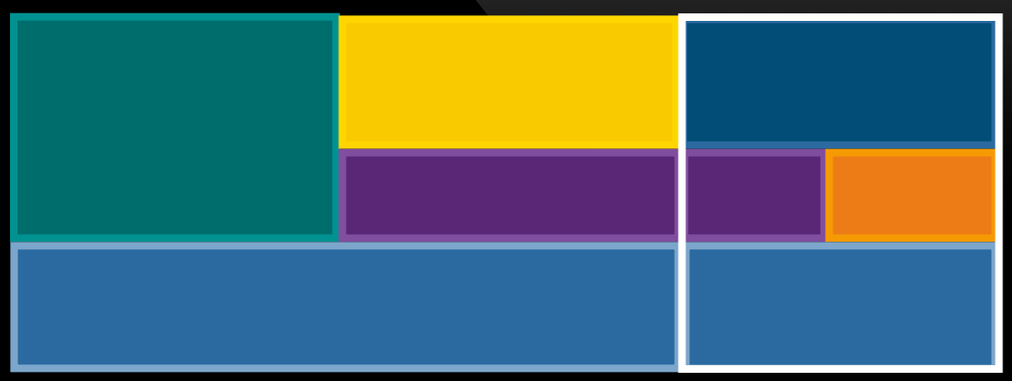


End User

Applets: Where We Are Going





End User

Which Should You Choose?

- Simple applets are easiest to deploy
- Consider a signed applet if you need more access to system
- Consider Java Web Start if you need native code, or are developing a desktop-type application deployed via the Internet

Reference Library

Documentation

Java Developer Documentation

http://developer.apple.com/documentation/java

Java Web Start Docs

http://developer.apple.com/java/javawebstart

Sun Java Plugin Docs

http://java.sun.com/j2se/1.4.1/docs/guide/plugin

ADC Java Developer Site

http://developer.apple.com/java

Reference Library

Documentation (continued)

Sun's Java Web Site

http://java.sun.com

Java 1.4.1 Update 1 Developer Preview

http://connect.apple.com

QuickTime for Java Seed

http://connect.apple.com

WWDC Link List

http://developer.apple.com/wwdc/urls.html#619

Java Contacts

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Java Developer Mailing List

Java-dev

http://lists.apple.com

http://developer.apple.com/wwdc2003/urls.html

Desktop Java Roadmap

608 Creating Great Java Applications on Mac OS X	Nob Hill Wed., 9:00am
619 Java and the Web	Nob Hill Thur., 10:30am
620 Java Native Integration on Mac OS X	Nob Hill Thur., 2:00pm
625 Maximizing Java Performance on OS X	Russian Hill Fri., 3:30pm
FF014 Java Feedback	The Marina Fri., 10:30am

Q&A

http://developer.apple.com/wwdc2003/urls.html

WWDC 2003

Worldwide Developers Conference